Washington State Department of Transportation

9/11/2023

Monitoring Report

Site Details

Site ID: 990178 Road Name: US 101 Mile Post: 146.85

Stream: Harlow Cr Tributory to: Queets R

Monitoring Inspection Details:

Inspection Type: Post-construction Inspection Date: 9/22/2020

Inspector(s): Tammy Schmidt,Zach Leitz

Post Construction Information

Structure conforms to permits and plans? Yes Structure Type: Bridge

Structure comments:

Alignment/configuration conforms to permits and plans? Yes

Alignment comments:

Dimension conforms to permits and plans? Yes

Dimension comments:

Bridge/Culvert Span (ft): 133.00 Structure Length (ft) Structure Rise (ft):

Streambed Slope (%): 1.55 Culvert shape: Not Applicable Culvert Material: Not Applicable

Culvert Shape Material Comment

Streambed channel conforms to permits and plans?

Streambed Material: Yes Streambed Shape/Flow: No Streambed Slope: No

Post-Construction stream channel Comments:

Does not conform to permits but does reflect plans. Project slope measured 1.55% but design slope is 1.213%. Channel under bridge and US design channel look good and conform to plans/permits.

Do other Design Features (LWM, coarse bands, barbs, preformed pools, etc) conform to permits and plans? Yes

Additional Details:

Monitoring Parameters (all intervals):

Streambed Material

Has the Site experienced a bankfull event? No

Is there streambed material throughout the Structure? Yes

Is there streambed material throughout the Design Channel? Yes

Freeboard at outlet (ft) at inlet (ft)

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Compare the streambed material throughout the structure and design channel to the common condition: Finer

Streambed Material Comments:

Native material is primarily cobble. Project bed mix may be similar once fines wash out.

Channel Flow / Shape

Is there unusual subsurface flow compared to the common condition of the reach? Yes

Does a low-flow channel exist through the entire length of the structure and design channel: No

The depth of the channel throughout the structure and the design channel compared to the common condition of the reach is: Shallower

The channel shape throughout the structure and the design channel compared to the common condition of the reach is: Similar

Is the channel shape consistent with the design expectations? No

If No or Undetermined, explain:

Channel shape does not match DS existing condition either horizontally or vertically. Removal of 4th LBC from old fishway altered the bed grade - not accounted for in design. 10" drop from top of transition riffle to bottom then a 2.9' drop to match bed grade into DS pool. Banks do not tie smoothly into DS reach.

Describe the channel path within the structure and the design channel: Meandering

Does the channel contact the structure wall at any location? N/A

If yes, the percentage of channel length in contact is: N/A

Also, if yes, contact is: N/A

Is there a measurable BFW inside the structure? Yes

Bankfull Width (BFW) of the channel within the structure: (ft) 23.60

BFW inside the structure compared to the design channel: Similar

BFW inside the structure compared to the common condition: Significantly narrower

BFW of the design channel compared to the common condition is: Significantly narrower

There is a defined channel: Through the entire project.

Channel Additional comments:

BFW DS design = 22.3' and bottom width = 17.4'; BFW US CC = 29.9'; loss of flow volume and subsurface flow occurring in the transition to the DS channel.

Streambed Slope

Streambed Slope (%) Upstream of the Structure: 1.47 Throughout the structure: 1.38

Downstream of the structure: 1.66 Overall project:

Describe streambed slope throughout the project compared to the common condition of the reach: Similar

Streambed Slope Compared to Reach Comments:

Streambed Slope Comments:

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Overall project slope = 1.55%; gradient upstream is 1.5-2%.

Other Details

Are there any Channel-Spanning hydraulic drops within the structure or the design channel greater than 0.50 feet? Yes

If Yes, provide comments, including descriptions of any headcutting or aggrading:

2.9' gradient drop (5.26%) through DS transition riffle to existing stream channel.

Do other Design Features (LWM, coarse bands, barbs, preformed pools, etc) function as intended? Yes

Features Comments:

LWM engaged at high flow but does little to provide fish habitat or channel forcing processes at low flow.

Photos taken during inspection? Yes

Final Determination

Is the structure Fish Passable? Yes

Risks noted to stream function, refer to category:

Actions determined by Monitoring: Increased Monitoring

Inspection Action Comments:

Extreme low flow condition during today's inspection. Recheck passage after rains have charged up the creek. Recheck DS tie-in for bed mobilization at Over-Winter interval.

Additional Comments:

Rechecked channel shape/flow on 9/28/2020. 5" rain over 72 hrs mobilized large amount of material throughout the design channel and DS pool reduced in size about 1/4 of original. Fish passage at downstream tie-in no longer a concern. Recheck bed stability at Over-Winter Interval with PO and WDFW.

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Site Details

Site ID: 990178 Road Name: US 101 Mile Post: 146.85

Stream: Harlow Cr Tributory to: Queets R

Monitoring Inspection Details:

Inspection Type: Over-winter Inspection Date: 5/3/2021

Inspector(s): Evan Dulin,Jocelyn Munoz,Tammy Schmidt

Monitoring Parameters (all intervals):

Streambed Material

Has the Site experienced a bankfull event? Yes

Is there streambed material throughout the Structure? Yes

Is there streambed material throughout the Design Channel? Yes

Freeboard at outlet (ft) at inlet (ft)

Compare the streambed material throughout the structure and design channel to the common condition: Similar

Streambed Material Comments:

Active incision, unstable channel shifted from left bank to right bank since last inspection.

Channel Flow / Shape

Is there unusual subsurface flow compared to the common condition of the reach? No

Does a low-flow channel exist through the entire length of the structure and design channel: Yes

The depth of the channel throughout the structure and the design channel compared to the common condition of the reach is: Similar

The channel shape throughout the structure and the design channel compared to the common condition of the reach is: Similar

Is the channel shape consistent with the design expectations? No

If No or Undetermined, explain:

Unanticipated channel shifting, excessive scour along banks, and mobilization of stream bed material occurred.

Describe the channel path within the structure and the design channel: Straight Line

Does the channel contact the structure wall at any location? N/A

If yes, the percentage of channel length in contact is:

Also, if yes, contact is:

Is there a measurable BFW inside the structure? Yes

Bankfull Width (BFW) of the channel within the structure: (ft) 23.78

BFW inside the structure compared to the design channel: Significantly narrower

BFW inside the structure compared to the common condition: Similar

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BFW of the design channel compared to the common condition is: Significantly wider

There is a defined channel: Through the entire project.

Channel Additional comments:

Banks incised up to 1.21 m.

Streambed Slope

Streambed Slope (%) Upstream of the Structure: 1.63 Throughout the structure: 1.39

Downstream of the structure: 1.67 Overall project:

Describe streambed slope throughout the project compared to the common condition of the reach: Similar

Streambed Slope Compared to Reach Comments:

Streambed Slope Comments:

Other Details

Are there any Channel-Spanning hydraulic drops within the structure or the design channel greater than 0.50 feet? No

If Yes, provide comments, including descriptions of any headcutting or aggrading:

Do other Design Features (LWM, coarse bands, barbs, preformed pools, etc) function as intended? No

Features Comments:

most LWM not contacting active channel; scour along bank at upstream tie in has exposed the LWM boles and is causing transient water surface drops of 0.29 m and 0.11 m (not full spanning).

Photos taken during inspection? Yes

Final Determination

Is the structure Fish Passable? Yes

Risks noted to stream function, refer to category:

Actions determined by Monitoring: Repair

Inspection Action Comments:

HQ/PO are devising a fix for summer 2021 to stabilize the right bank upstream of the bridge and reconnect the bench wetland if possible. Revisit after that work concludes.

Additional Comments:

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Attachments:

3002_NOJurisLtrHarlowCr.pdf
Harlow Creek Basis of Design.pdf
Hydraulic Project Approval.pdf